

Species identification and age classification of the jaws of some common Indian ungulates near Mudumalai Wildlife Sanctuary¹

J. A. COHEN

*Institute for the Study of Animal Problems, Humane Society of the United States,
Washington, D.C., U.S.A.*

(With two plates containing four figures)

On any journey into the Mudumalai Wildlife Sanctuary or surrounding jungle areas of Tamil Nadu, one is likely to find a number of jawbones from ungulate species, the hooved mammals. Many will undoubtedly be those of domestic cattle (*Bos taurus*) and buffalo (*Bubalus bubalis*), while others commonly found will be of Chital (*Axis axis*) or Sambar (*Cervus unicolor*). It behooves both the casual nature-lover and professional field-zoologist alike to be able to distinguish these jaws at a glance. Information obtained in this way may be of value in the study of carnivore food habits and terrestrial ecology (Cohen *et al.* 1977). As adult domestic ungulates are typically larger than wild species, size of the jaw is, of course, a primary consideration. However, it may be more difficult, for example, to distinguish between the jaws of a domestic calf and a yearling sambar, or between sambar and chital fawns.

The material presented here is intended to help clarify and make easier such species and, to a limited extent, age determinations in the

hope of stimulating further research along these lines.

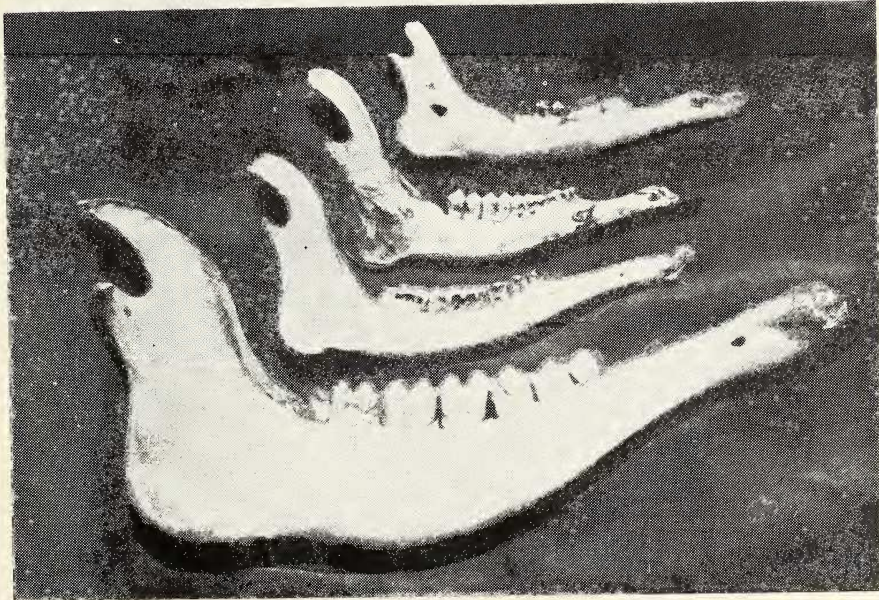
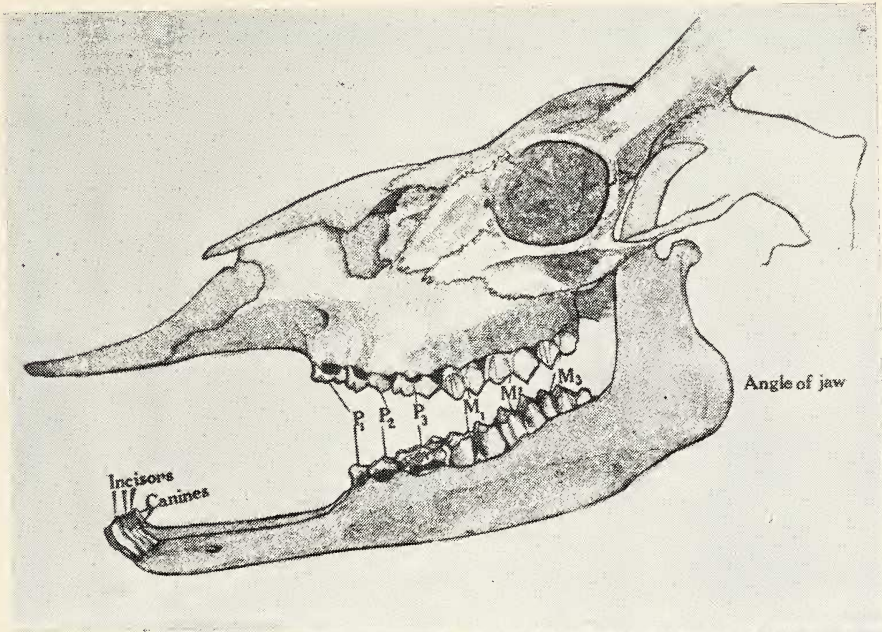
BASIC DENTITION

Most mammals of the families Cervidae (e.g. Chital, Sambar) and Bovidae (e.g. Cattle, Buffalo) have 32 teeth, twelve of which are on the upper jaw (6 per side) and twenty of which are on the lower jaw (10 per side).

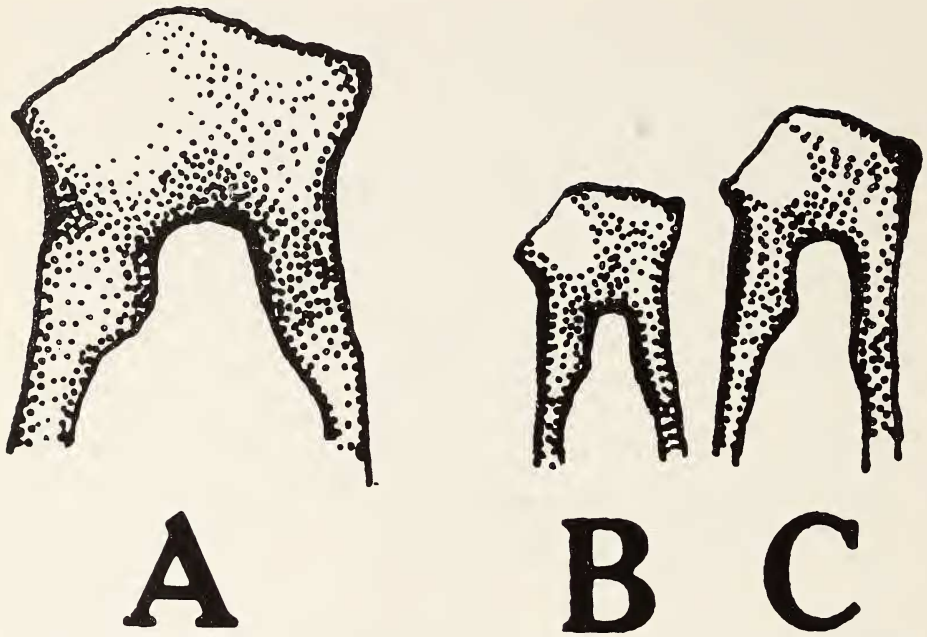
Figure 1 indicates the positions of the incisors, canines, premolars, and molars in a generalized ungulate. Note that most ungulates have no upper incisors but instead have a hard pad on the roof of the mouth against which the lower incisors grind. In addition, upper canines are usually lacking while lower canines are usually not specialized and essentially function as incisors. Three premolars and three molars occur on each side of both upper and lower jaws. It is customary to refer to these teeth sequentially as: P₁, P₂, P₃, M₁, M₂, and M₃, and to term them collectively, the molariform teeth.

The fawns and calves of ungulates are born with deciduous ("milk" or "baby") teeth

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Above: Fig. 1. Dentition of a generalized ungulate. Below: Fig. 2. Comparison of various ungulate jaws. From top to bottom: Sambar fawn, Chital fawn, Chital adult, Domestic cattle adult.



P₁

P₂

P₃

M₁

M₂

M₃

less than 1.5 yrs						usually not yet erupted
1.5 - 3 yrs						
3 - 5 yrs						
more than 5 yrs						

Above: Fig. 3. Relative sizes of P₁ in (A) Sambar fawn, (B) Chital fawn, and (C) Chital adult. (Not drawn to scale). Below: Fig. 4. General tooth wear pattern for molariform teeth.